

CLAIMS

What is claimed is:

- 1 1. An expandable sand screen for use in a wellbore, comprising:
2
3 an expandable base pipe;.
4
5 a base filter layer disposed along the expandable base pipe; and
6
7 a separable filter layer disposed along the base pipe, the base filter layer
8 having a solid region disposed at a separation area of the separable filter layer.
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- 1 2. The expandable sand screen as recited in claim 1, further comprising a shroud
2 surrounding the base filter layer.
- 1 3. The expandable sand screen as recited in claim 2, wherein the base filter layer and
2 the separable filter layer are secured to the shroud.
- 1 4. The expandable sand screen as recited in claim 1, wherein the base filter layer is
2 located along an exterior of the base pipe and between the separable filter layer
3 and the base pipe.
- 1 5. The expandable sand screen as recited in claim 2, wherein the shroud comprises a
2 plurality of shroud sections affixed to the base pipe.

- 1 6. The expandable sand screen as recited in claim 1, wherein the separable filter
2 layer is a woven filter.
- 1 7. The expandable sand screen as recited in claim 1, wherein the separable filter
2 layer comprises a plurality of filter pairs, each filter pair being separated by a gap
3 upon expansion of the base pipe.
- 1 8. The expandable sand screen as recited in claim 2, further comprising at least one
2 backing strip extending longitudinally along the expandable base pipe, the
3 backing strip serving to connect the shroud to the expandable base pipe.
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- 1 9. The expandable sand screen as recited in claim 8, wherein the backing strip
2 comprises a channel for receiving a control line.
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- 1 10. An expandable sand screen system, comprising:
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3 an expandable base pipe; and
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5 a pleated filter layer having a pleated filter region in which the pleated
6 filter layer is folded back on itself.
- 1 11. The expandable sand screen system as recited in claim 10, further comprising a
2 shroud, the pleated filter layer being disposed between the shroud and the
3 expandable base pipe.
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- 1 12. The expandable sand screen system as recited in claim 10, further comprising a
2 base filter layer intermediate the expandable base pipe and a pleated filter layer.
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- 1 13. The expandable sand screen system as recited in claim 10, wherein the pleated
2 filter layer comprises a pair of primary filter sections separated by a connecting
3 section.
- 1 14. The expandable sand screen as recited in claim 13, wherein the primary filter
2 sections comprise a woven material.
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- 1 15. The expandable sand screen system as recited in claim 13, wherein the connecting
2 section comprises a flexible material.
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- 1 16. The expandable sand screen as recited in claim 14, wherein the connecting section
2 comprises a distinct woven material having properties unique relative to the
3 woven material of the primary filter sections.
- 1 17. The expandable sand screen system as recited in claim 16, wherein the distinct
2 woven material and the woven material have different weave densities.
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- 1 18. The expandable sand screen as recited in claim 16, wherein the distinct woven
2 material is compressed relative to the woven material.
- 1 19. The expandable sand screen system as recited in claim 10, wherein the pleated
2 filter layer is a laminated layer.
- 1 20. The expandable sand screen system as recited in claim 13, wherein the connecting
2 section comprises a perforated sheet.
- 1 21. The expandable sand screen system as recited in claim 10, wherein the pleated
2 filter layer comprises a fold and at least one roller disposed in the fold.

- 1 22. The expandable sand screen system as recited in claim 21, wherein the at least
2 one roller is hollow to receive a control line.
- 1 23. An expandable sand screen, comprising an expandable base pipe and a filter layer
2 affixed at an interior surface of the base pipe.
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- 1 24. The expandable sand screen as recited in claim 23, wherein the filter layer has a
2 first longitudinal edge and a second longitudinal edge, the first longitudinal edge
3 being affixed to the interior surface and the second longitudinal edge overlapping
4 the first longitudinal edge.
- 1 25. An expandable sand screen, comprising:
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3 an expandable base pipe having a plurality of openings; and
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5 a plurality of non-overlapping filter sections attached to the expandable
6 base pipe, each filter section being disposed to cover at least one of the plurality
7 of openings upon expansion of the expandable base pipe.
- 1 26. The expandable sand screen as recited in claim 25, wherein the plurality of filter
2 sections is positioned such that the plurality of openings remains uncovered prior
3 to expansion.
- 1 27. An expandable sand screen, comprising:
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3 an expandable base pipe;
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5 a plurality of overlapped filter sheets; and
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7 at least one liner disposed between the plurality of overlapped filter sheets.

- 1 28. The expandable sand screen as recited in claim 27, wherein the plurality of
2 overlapped filter sheets are deployed in pairs of overlapped filter sheets.
- 1 29. The expandable sand screen as recited in claim 28, wherein the at least one liner
2 comprises a plurality of liners with a liner disposed between each pair of
3 overlapped filter sheets.
- 1 30. An expandable sand screen, comprising:
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3 an expandable base pipe; and
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5 a filter disposed along a surface of the expandable base pipe, the filter
6 having a first layer with first layer openings and a second layer with second layer
7 openings, wherein the first layer and the second layer are combined such that the
8 first layer openings are offset relative to the second layer openings to provide
9 filter openings of desired size.
- 1 31. The expandable sand screen as recited in claim 30, wherein the first layer
2 openings and the second layer openings are formed as slots.
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- 1 32. The expandable sand screen as recited in claim 30, wherein the filter is disposed
2 around the expandable base pipe and separated from the expandable base pipe by
3 a stand-off layer.
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- 1 33. An expandable sand screen, comprising a filter formed by a plurality of slidably
2 engaged strands, wherein upon expansion of the filter, the plurality of slidably
3 engaged strands move to positions that create filtration openings.
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- 5 34. The expandable sand screen as recited in claim 33, wherein the plurality of
6 slidably engaged strands are curved.

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1 35. The expandable sand screen as recited in claim 33, further comprising an
2 expandable base pipe deployed within the filter.

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1 36. An expandable filtration system for use in a wellbore, comprising:

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3 an expandable sand screen having a zonal isolation region and an adjacent
4 filtration section, the zonal isolation region comprising a blank screen section that
5 prevents fluid flow into the sand screen while the adjacent filtration section
6 enables fluid flow into the sand screen.

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1 37. The expandable filtration system as recited in claim 36, wherein the sand screen
2 comprises a plurality of adjacent filtration sections separated longitudinally by the
3 blank screen section.

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1 38. The expandable filtration system as recited in claim 37, wherein the blank screen
2 section comprises a plurality of blank screen sections.

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1 39. The expandable filtration system as recited in claim 36, wherein the blank screen
2 section comprises an injection section for injecting a flow preventing material
3 radially outwardly through the expandable sand screen.

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1 40. The expandable filtration system as recited in claim 39, wherein the flow
2 preventing material comprises a cement.

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1 41. The expandable filtration system as recited in claim 39, wherein the flow
2 preventing material comprises a gel.

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1 42. The expandable filtration system as recited in claim 36, wherein the blank screen
2 section comprises an elastomeric coating.

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1 43. The expandable filtration system as recited in claim 36, wherein the blank screen
2 section comprises elastomer injected sheets.

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